DOCUMENT RESUME

ED 078 865 LI 004 400

AUTHOR	Rozsa, George
TITLE	Some Considerations of the Role of Scientific Libraries in the Age of the Scientific and Technical Revolution; An Essay and Approach to the Problem.
INSTITUTION	Hungarian Academy of Sciences, Budapest.
PUB DATE	70
NOTE	27p.; (61 References)
AVAILABLE FROM	Bureau of Hongrois Pour La Protection Des Droits D' Auteur, H - 1364 Budapest P.B. 67, Hungary
EDRS PRICE	MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	Library Programs; Library Research; Library Science; *Scientific Research; *Special Libraries; Technological Advancement
IDENTIFIERS	*Library Role; Scientific and Technical Information

ABSTRACT

The question to be examined in this essay is whether the practice of scientific libraries (including special libraries and documentation) can rely on well-founded and developed theoretical works or studies as regards the conception of development, the requirements of the scientific and technical revolution, its place in the social division of labor and the interrelationship between its components. And whether there are some questions relating to general educational policy, sociology and library theory, in short, to library philosophy which are raised throughout the world by scientific and technological development and economic growth. In the author's opinion, the answer to the first question is in the negative while it is in the affirmative to the second. However, the two questions are closely related, and the answers to be given and a thorough explanation of the problems involved is conditional upon long-term, multi-dimensional, and institutional research work on the part of the specialists. This study seeks to contribute to this research work by raising certain questions and outlining certain hypotheses. (Author/SJ)

ED 078865

A MAGYAR TUDOMÁNYOS AKADÉMIA KÖNYVTÁRÁNAK KÖZLEMÉNYEI
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50.

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SOME CONSIDERATIONS OF THE ROLE OF SCIENTIFIC LIBRARIES IN THE AGE OF THE SCIENTIFIC AND TECHNICAL REVOLUTION

AN ESSAY AND APPROACH TO THE PROBLEM

BUDAPEST, 1970

LI 004 400

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RÓZSA, [György] George:
Some Considerations of the Role of Scientific Libraries in the Age of the Scientific and Technical Revolution. — An Essay and Approach to the Problem.
Bp. 1970. 25. p. 24 cm.
| A Magyar Tudományos Akadémia Könyvtárának Közleményei. — Publicationes Bibliothecae Academiae Scientiarum Hungaricae. 50. |
ETO 027.021 [301.175:62]

Alak B/5 — Terjedelem 2,4 (A/5) ív
Megjelenés 1970 — Példányszám 800
Felelős kiadó: az MTA Könyvtárának igazgatója
Bp. V., Roosevelt tér 9.
70.70551 Akadémiai Nyomda, Budapest — Felelős vezető: Bernát György

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Summary*

The main argument of this study may be summed under the following headings:

1) Owing to its scientific and economic importance, the scientific library forms a particular field of research in itself;

2) Information spheres in the intellectual communication system of society;

3) A hypothetic multi-channel model of the flow of information carried by special literature;

4) The comparative backwardness of theoretical work in one of the main reasons for the virtual irreconcilability of contradictions between the individual tendencies in library policy and the different "oriented" approaches (library science-oriented approach; documentation-oriented approach; history-oriented approach);

5) The conception of the unity of librarianship and the library system needs to be further developed. The scientific library has two features: it appears as part of the general library system and as part of the entire body of science, and as such, is a subject of science policy;

6) The theoretical formulation and foundation of the division of labour between scientific libraries (as general) and special libraries (as particular) is one of the key issues of a further development of scientific librarianship as a whole;

7) Scientific libraries have a special task in reconciling the contradictions, divergent views, and problems arising from the debate on the "two cultures" (i.e. the [natural] scientific vs. humanistic erudition and culture);

8) Scientific libraries also have a special task in eliminating backwardness, in reaching the world standard in the economic, scientific, and technological fields, and in increasing "per capita kind feeling" in the human field.

The question to be examined is whether the *practice* of scientific libraries (including special libraries and documentation) can rely on well-founded and developed theoretical works or studies as regards the conception of development, the requirements of the scientific and technical revolution, its place in the social division of labour and the interrelationship between its components. And whether there are some questions relating to general educational policy,

* The first version of this study was published in No. 4., 1965 of *Magyar Könyvszemle* (p. 297—312), a periodical of the Hungarian Academy of Sciences with the following title: A tudományos könyvtár a tudományos-technikai forradalom korában. (Scientific Library in the Age of the Scientific and Technical Revolution.)

sociology and library theory, in short to *library philosophy* which are raised throughout the world by the scientific and technological development and economic growth?

In my opinion, the answer to the first question is in the negative while it is in the affirmative in the second. However, the two questions are closely related, and the answers to be given and a thorough explanation of the problems involved is conditional upon long-term, multi-dimensional, and institutional research work on the part of the specialists.

This study seeks to contribute to this research work by raising certain questions and outlining certain *hypotheses*. In my view, to raise the key issues of a debate may, in itself, be profitable in certain cases, and I consider *the question of the place and development of the scientific library in the conditions of the scientific and technical revolution* as such a case.

I. OWING TO ITS SCIENTIFIC AND ECONOMIC IMPORTANCE, THE SCIENTIFIC LIBRARY FORMS A PARTICULAR FIELD OF RESEARCH IN ITSELF

Theory is nourished by practice, and generalizes the practical experiences. At the same time, as science shows, a good theory is ultimately the best practice. Starting from certain practical examples, which are meant *to serve the purpose of this study only*, let us now consider some data on the work of scientific libraries and examine *what real social needs they are expected to meet;* to what extent they have succeeded in meeting these needs; on what basis they are developing. Only a full knowledge of these problems can justify theoretical considerations, however hypothetical. As a case study, let us take the example of Hungary, a country with a comparatively well-developed cultural and library system, and with minor and limited economic resources and possibilities. (Data referred to in the study show the situation a few years ago but the recentness of data does not count much since they are only cited as examples.)[1]

In the late sixties, 1600 scientific and special libraries were operating in Hungary (of which, some 1100 were in the capital), holding 27 million library units with an average yearly circulation of 8 to 10 millions. (By way of comparison: in 1963 a total of 19 000 libraries were active in Hungary, of which some 10 000 belonged to the public library system, and 7000 to the school library system. From our particular viewpoint only a fragment of this number may be taken into consideration, above all some of the county libraries which have made a certain gradual progress.)

In 1963, over 76 million forints were spent on acquisitions in scientific and special libraries. According to 1964 figures, imported material amounted to an equivalent of almost 26 million forints. The value of a sizeable amount of foreign literature, especially periodicals and research reports, received "on a forint basis" (i.e. without spending foreign currencies), should also be added to this sum. Listing 380 000 items, over 2000

[1] MM Közművelődési Főosztály. Jelentés a tudományos szakkönyvtári szakfelügyeletről. Gépirat. 9 p. (Ministry of Education. Dept. of Public Education. Report on the scientific and special libraries. March, 1965.); Tudományos és szakkönyvtárak 1963. (Statistics on scientific and special libraries.) Budapest, 1964, K. Statisztikai Hivatal. pp. 65.; Statisztikai tájékoztató 1964. Népművelés. Tudományos és szakkönyvtárak 1964. évi adatai. MM. Tervfőosztály statisztikai osztálya. 1965. Soksz. (Statistical Bulletin. 1964. Adult education. Scientific and special libraries. Figures for 1964.); A tudományos kutatás helyzete és fejlődése. *Statisztikai Időszaki Közlemények*. vol. 72. 1965/6. pp. 71. (The state and development of scientific research.); Mérnökök, technikusok, egyéb felső- és középfokú végzettségű szakemberek foglalkoztatása. *Statisztikai Időszaki Közlemények*, vol. 64. 1964/6. pp. 193. (Employment of engineers, technicians and other high and middle-grade specialists.); A Magyar Tudományos Akadémia tizenöt éve (1949 – 1964). Melléklet az MTA Elnökségi beszámolójához, a CXXV. közgyűlésén. Budapest, 1965. pp. 213. (Fifteen years of the Hungarian Academy of Sciences. Supplement to the report of the Presidium submitted to the 125th General Assembly.)

bibliographical and documentary publications were registered in 1963, and 55 000 translations of scientific and technical publications were reported, totalling 960 000 pages. At the end of 1963, 4400 persons were employed by scientific and technical libraries, of whom 3700 were engaged in professional activities. The distribution of libraries by supporting agencies is as follows: company and office libraries 45%; higher education 42%; research and designing institutes 10%. The average number of library units held by the latter type of libraries was 11 000 while the average annual budget allocation for acquisitions to research libraries was 100 000 Ft, as compared to 47 000 in other libraries. 64% of the total holdings of scientific and special libraries belonged to scientific libraries of a national character.

And what is the size of *research network* to be supplied with information by the scientific and special libraries?

In Hungary there are some 900 scientific institutions, of which 131 are research institutes proper. In 1963, 2,25% of the national income was spent on research and development, totalling 3650 million forints. Of this sum research expenditures and investments amounted to 2365 millions. The number of those engaged in scientific institutions was well over 38 000.

Without giving any detailed explanation and comparison, which would take a separate statistical study, here are some further figures for Hungarian research institutes, scientific and special libraries, as well as related services in order to give an idea of their order of magnitude.

	Research	*Scientific and special libraries*
Number of institutions	900 (of which 131 are research institutes)	1600 (of which 160 are associated with research or designing institutes)
Personnel	38 000	4400
Expenditure (including technological development and investments)	3650 million Fts (of which 2365 million forints are on research)	76 million Fts (for acquisition only, without maintenance costs, personnel and other expenditures)
Research projects, library holdings and services	8 to 10 thousands[2]	27 million units. Lending: 8 to 10 millions. Bibliographical and documentary publications: 2200 with 380 000 items processed. Translations: 55 000 (960 000 pages)

To give an overall picture, it should be added that the number of the gainfully employed population was 4,5 millions of which 3,3% held a university diploma or the equivalent, (11,9% of the population employed in the socialist sector had secondary school certificates or were graduates from higher educational institutions as of October 1, 1963). The number of scientists and scholars who had obtained higher degrees awarded by the Hungarian Academy of Sciences was 2660. Of these 360 were holders of the degree of "doctor scientiarum"; and 2300 had possed the degree of "candidatus of scientiarum" As of September 1, 1964, 1600 "aspirants" (including foreign aspirants) were preparing to obtain the latter degree.

To be sure, these data need further specification and correction, but this is unnecessary here; nor is it necessary to indicate certain proportions and regularities or make international comparisons — it would take further investigations, analyses, etc. — since they are only meant factually to support the

[2] In reality, the number of research works was less than that, however fragmented the projects were.

statement that the scientific library itself, by virtue of its important tasks (and this applies both to data on the research sector and to the sector of scientific libraries), is a subject of study involving investigations in such fields as complex library theory; organization and management science (in harmony with the library's specialized fields of interest or "profile" as it is called); technological development; economics. Naturally, these investigations should be highly differentiated according to library functions (promoting education, research and tecnological development) and to the library's "profile" (specialized fields of interest, branches of science).

Besides these practical requirements, scientific libraries as cultural institutions — or, in the case of big historical collections, museum-type and general cultural institutions, represent certain "*intangible assets*" which cannot be expressed in quantitative terms or if so, then only with great difficulty. And it is anyhow meaningless, since libraries form an organic part of a country's intellectual assets, and (like other public collections, major theatres, opera houses, etc) also represent the country's intellectual level irrespective of their practical usefulness at a given time. At any rate, it should not be left out of consideration that the concrete and readily applicable results of scientific library work — even in the field of natural sciences and technology — may only *indirectly and through transmissions* make their effect felt (in scientific work and research).

Owing to its manifold functions and the social demands it has to meet, the scientific library, acting as a supporter of scientific and practical economic work, as a workshop of higher education and training, as an institution for the diffusion of culture and general knowledge, and last but not least as a scientific institute, thus forms a complexity of scientific problems. This being so, i.e. that the scientific library itself is a scientific problem, it is also obvious *hat the solutions may be attained through scientific methods and approached hrough theoretical work only.*

II. INFORMATION SPHERES IN THE INTELLECTUAL COMMUNICATION SYSTEM OF SOCIETY

One important junction of theoretical questions concerning scientific libraries is the relation of the latter to special literature information (the term "special literature information" will henceforward be understood as information given on and from special literature).

The socially necessary information on special literature is an *integral part* of the *socio-economic information system* (including scientific progress and technological development) and the scientific approach to their problems may only be conceived in relation with the *whole* (information system) and *part* (information on special literature) relationship.

Society needs every kind of information irrespective of *provenience and form* which may be effectively utilized within organized social activities (economic, scientific, technological, etc.). What is strongly underlined here is the *content, the usability on the merits of information* rather than its form and technical "production", its channels, and so forth. Of course the latter are also of *great moment* since they render information *realizable*. From the particular aspects of this study, however, their treatment may be disregarded and this problem has been widely discussed in the special literature anyhow.

Hence it follows that information on special literature is *a subordinate concept of the intellectual communication system of society*. The *specific weight* of the importance of information on special literature within the intellectual communication system of society largely depends on time, the subject field and the purpose of application.

Information on special literature in every respect forms only a part — and a part of variable specific weight — of information.

Information on special literature or rather special literature information as has been referred to above, which — taken in a broad sense and as a collective term — represents a "collective memory", the continuity of knowledge and intellectual assets, involves information on special literature, *both primary and secondary*, i.e. its collecting, storing, processing and transmitting institutions, the types of services which functionally and organizationally materialize (in the historical sequence of their evolvement) in library, bibliography and documentation. Special literature information in this sense is *not identical* with documentation. Moreover, documentation is ***not a synonym*** for organized information or otherwise:

documentation → special literature information → information system

Starting from the most general conceptual sphere, this process may also be represented this way:

information system → special literature information { library / bibliography / documentation

Documentation forms the most mobile part of special literature information and plays the most active role in economic and technological development, taken in a strict sense.

Documentation is concerned with that par tof the entire body of knowledge *which, more than anything, is subject to "moral amortization"*, i.e. to obsolescence. It is characterized by a *vast amount of data*. In view of the fact that the bulk of data is partly *readily applicable* in economic and technological development, partly more-or-less *ephemeral* in character, the *speed* of their processing and transfer seems to be the most important factor. Attempts at solving the *mechanization of documentation* follow from these three factors or rather from the demands for them.

Besides its content, form and the circumstances of its diffusion, special literature is also determined, to some extent, by the handling of the actual documents. A price-list in a company (in its calculation section) is an aid of "consumable supply" nature, while in a national library it is looked upon as a domestic print, a specimen of "museum-value", or in a special library it is handled as special literature for research purposes. This poses the question of whether a statistical survey (published in 50 to 100 copies or "non-published") designed for a restricted circulation is "special literature"? And again, whether standards, patent specifications, prospectuses, catalogues of industrial fairs, market-reports in foreign trade (in a few dozens of copies for official use only) may be regarded as "special literature"? In this sense, we may speak of the *double feature of documents*. In a broad sense, the afore-going categories may all be qualified as documents. However, as regards *content*, special literature

can also be taken in a *narrow sense* which, – feasibly –, does not permit the arbitrary inclusion of the former categories in it. From the aspect of documentation, these "non-traditional" documents (research reports, prospectuses, standards, etc.) *belong to the sphere of special literature information or rather to the still wider sphere of economic and technical information.*

The double feature applies not only to special literature: *information*, necessary to society, also has at least *two features*. First it appears as information explored and transmitted to be applied to a certain task ("direct mission-oriented information"), then it may also appear as information serving current awareness and general orientation ("indirect mission oriented information").

It seems feasible to treat information, which lends itself for use in production, economic or technological activities, as *a product of special* services and as something representing economic *value*, emerging from and serving the purposes of the process of reproduction on an increasing scale. In other words, criteria for this examination should be formulated in terms of economic categories according to this process:

production → distribution (circulation) → consumption

This study tends to approach the problems of information from the "consumption" or utilization side of special literature information in contrast with the more customary „production" side, implying a quantitative contemplation of the subject.

What the "production" – quantitative contemplation of special literature information, a practice which has been predominant up to now, implies, is that the stress is placed on the production of *secondary information*, that is, the products of documentation play the leading role. From this it emerges that the system of special literature information may well be compared with a *railroad without a time-table* along the lines of which the trains are loaded at stations (products of documentation) and the traffic manager's only concern is to let the trains start out from his station; after the train's departure he does not mind any longer what will happen to it; whether it will "collide" with other trains; what other "parallel" freight is under way; whether or not it will safely reach its destination; where it will be unloaded? Thus, once the train has left, he just does not care about it.

It is, therefore, essential *to shift the stress onto the "consumption", onto the use of information, and starting out from this, to define its production and distribution, too*:

The socially necessary special literature information → production of secondary information (with a reasonable division of labour) → distribution (circulation, according to needs).

III. A HYPOTHETICAL MULTI-CHANNEL MODEL OF THE FLOW OF INFORMATION CARRIED BY SPECIAL LITERATURE

Documentation does not exist by itself; it is always the documentation of *something* (a branch of science, a profession, art, etc.); documentation has to start out from the actual needs of these things – *even if the individual sectors are not always able to formulate their needs.* These needs may be *latent or potential*, and it is precisely one of the most important tasks of special

literature information to contribute its own inquiries, theoretical and practical, to raising and formulating the needs.

All this may seem obvious or even commonplace, but these problems will be put in another light by taking stock of the individual products of special literature information, a good part of which will appear as being produced without adequate planning or "market research".

The "*hypothetical multi-channel*" *model* of the flow of secondary information — and of organized special literature information in general — may be outlined (through the example of an imaginary industrial company) as follows:

The company subscribes to a foreign technical journal, most essential in respect of the given company's field, namely,

X_1 carrier of primary information; and is also receiving:

Y_1 international abstracting journal (Western), a carrier of secondary information, covering X_1, too;

Y_2 international abstracting journal (Soviet, Referativny Zhurnal), another carrier of secondary information which, too, covers X_1;

Y_3 abstracting journal of a national documentation center, a third carrier of secondary information, which naturally also covers the professionally so important X_1;

Y_4 abstracting journal of the national documentation center or institute of the given industrial branch which, again, may not leave out X_1;

Y_5 information (documentation) bulletin, published by the company which — besides Y_1—Y_4 — reviews, in detail, X_1 as the most important technical journal of the given industrial branch since the company knows best — and there is much logic in this — what it needs, and, after all, X_1 can be most rapidly and directly processed "at home" and addressed to the "desks".

And now the circle closes: there comes the chief engineer or the chief technologist and requests X_1, the carrier of primary information because no documentary publication can substitute for the direct scanning of the so important X_1.

It is highly probable that this hypothetical "multi-channel" model is, by and large, characteristic of the flow of special literature information. This being so, the question arises whether it is not more feasible to adopt *the much more efficient end economical method of buying "licences" from abroad* by analogy with the problems of R & D and in so doing to rest content with the most outstanding international abstracting journal than to produce an ineffective maze of secondary information in a more primitive way and in a „multi-channel" system at national level? The model outlined above would certainly seem "demoralizing" were the author to suggest — *against* his intentions and convinction — that there is no need for documentation and it is not worth while dealing with it and spending on it, an attitude shown, unfortunately enough, by many in the economic and technological life, or at least their neglecting this problem refers to such an attitude. The author's main argument is precisely that the cause of scientific information should be treated on the basis of serious programs elaborated with scientific methods, without exaggerations and with a view to the interests of science and the national economy.

IV. THE COMPARATIVE BACKWARDNESS OF THEORETICAL WORK IS ONE OF THE MAIN REASONS FOR THE VIRTUAL IRRECONCILABILITY OF CONTRADICTIONS BETWEEN THE INDIVIDUAL TENDENCIES IN LIBRARY POLICY AND THE DIFFERENT „ORIENTED" APPROACHES

In respect of theoretical work and studies, the actual situation is far from being favourable though the number of publications on libraries and librarianship makes up a separate library. For this there are many reasons, practical and subjective, one of them being that particularly since World War II librarians have had to face a vast amount of urgent daily routine work (storing, cataloguing, reference, and the related organizational, budgetary, etc. problems) on account of the information deluge and the increase in circulation, so much so that *their energies and interests have necessarily been shifted towards the solving of pressing functional, operational and organizational problems.* Another factor affecting the comparative backwardness of theoretical work is what Marx said about science (but "mutatis mutandis" it applies even more to library problems), namely that the value of science as the product of intellectual work has always been underrated since the working time necessary to its reproduction is not proportional to the working time necessary to its original production. Thus, e.g., a schoolboy may learn the binominal theorem in an hour.[3]

Thus was it that librarians with scientific ambitions abandoned the not too promising field of library theory and tended towards one of the "established" branches of science and scholarship where they were not exposed to indifference or to the danger of being possibly qualified as a scholar of a pseudo-science. It is quite another question that *library theory may be successfully cultivated only in close connection with those specialized branches of science or scholarship the support of which forms the primary task and justification of scientific libraries.*

Another hindering factor has been (particularly in the past) the often unfruitful debates going on for reasons of prestige, between librarians and documentalists at national level which, in fact, have for the most part covered organizational and administrative problems. As a reaction to the sudden advance of scientific and technical documentation, and also because the scientific library could really not readily respond to problems arising from the rapid development of science and technology (nor could it be prepared for it), libraries of the humanistic studies and social sciences found their historically developed attitude justified the stressed, one-sided, if not exclusively, study of historical problems (history of books and libraries, processing manuscripts and old books, retrospective bibliography, etc.). Raising the question of whether scientific libraries need "library scientists" or "learned, scientific librarians", this controversy is greatly responsible for the fact that *library science, whose concept and scope has not been clearly enough formulated up to now, tends to give priority to well-established and widely accepted investigations into cultural history over library theory.* It is obvious that what scientific libraries need *are scientific librarians who have a creative proficiency in one or another branch of science or scholarship and are conducting research in it but who also pursue their profession*

[3] Értéktöbblet elméletek. 1. rész. Budapest. 1958. Kossuth K. pp. 315. (Theories on surplus value. Part 1.)

with a good knowledge of the particular scientific methods and skills of library work.[1] What the concept of the "learned or scientific librarian" implies is the acceptance of the individual librarian as scientist or scholar but it also implies the underestimation of library work as a profession of scientific nature, while the concept of "library scientist" includes both of the former but — on account of their unclarified content — in such an unfortunate way that it raises douts about of them.

All this and other reasons not mentioned here have led to a standstill in library theory, sometimes even to its devaluation, and to the development of virtually irreconcilable trends and different "oriented" approaches.

These can be outlined, by and large, as follows: *library science* (in close association with the public libraries)*-oriented, documentation-oriented* and *history-oriented approaches.* Let us now examine their development, content and the problems of their irreconcilability in an effort to find possibilities for a synthesis.

Library science-oriented approach

This approach subsists on the traditions of historically developed large libraries from the times when scientific information as a concept did not exist and when specialization in science, and consequently in the library field, was at an initial stage only, when the general scientific library directly furnished literature to science, being the only depository of scientific information. The intensive study and handling of highly valuable collections, the formulation of the place of the library — to use a modern term — in the division of labour, as well as the theoretical generalization, to some extent, of the scientific library's practice are all factors explaining as obvious the library science-oriented approach which has gradually developed into "Bibliothekswissenschaft", "library science" or "bibliotekovedenie". The appearance and the extremely rapid development of documentation and public libraries, owing to the unprecedented rate of scientific and technological progress and to the revolutionary changes in the public demands for culture and education particularly in the socialist countries have confronted libraries with a new situation throughout the world. *The relative homogeneity of librarianship* has disappeared, wide-ranging networks of special libraries and documentation centres have evolved, networks of public libraries have accounted for an ever growing share in the cultural budget, and society has shown an increasing interest in them. As a result of these two processes of opposite origin and purpose, the scientific library has — virtually or sometimes actually — been pushed into the background, and documentation with its natural freshness and expansive methods has taken over a considerable part of the information functions or has developed new ones the libraries had not been prepared to fulfil. Thus the scientific library seemed to have passed over to the defensive to some extent, and documentation with its new functions and methods

[1] The number of professionals specializing in two or more disciplines has increased over the past few years (e.g. engineer-economists, applied and mathematical linguists, etc.). The development of complex and borderline disciplines involved complex training and qualifications, too.

appeared *not as a partner* created by scientific and technical needs but *as a rival*. The expansive work of documentation and its sometimes unaccountable attitude towards the scientific library (exaggerated emphasis on the library's conservativism and on independence of library work) have only deepened the conflicts. In practice, all this appeared as quarrels over matters of competence, organization and administration, and the relevant theoretical considerations have led to misunderstandings or often to debates, showing a downward tendency though. The other process, the immense development of the public library system, in turn, has given a new impetus to "library-orientedness" in another respect. Arising from the growing number of libraries, many-sided practical problems of training, organization, coordination, and those deriving from the development of internal library work have made it *imperative to collect experiences and organize their exchange*, resulting in *methodological work* which, in turn, gave rise to theoretical generalizations underlying what is known as "library science". Thus "library science", interpreted in different ways and understood to have different contents in time and space, concentrated essentially on *the internal* work of libraries, considering it as a scientific task — which it really is in certain respects —, and in this endeavour the old library-oriented approach encountered an interpretation of "library science", evolved from the new practice of public libraries.

The main reason for misunderstandings lies not so much in the label after all why should there not be a science for librarianship if there is theatre or film reserach —, as in the fact that debates over several decades have not succeeded in filling the concept with unambiguous content. Furthermore, several practical problems have also gotten into the concept of library science *the solution of which, although requiring scientific training, cannot be looked upon as science.*[5]

What has been said of the library-oriented approach as the most general collective term necessarily applies to a certain part of elements of the other two "oriented" approaches, thus facilitating a briefer description.

Documentation-oriented approach

The objective reasons for the evolvement of the documentation-oriented approach are deeply rooted in economic and technological progress. It was about the turn of the century that the needs of technology and practical economic work raised demands for new forms, methods and content of information. This new-type demand was called forth by industrial companies, and, to a lesser extent, by science, and it would be a mistake to believe that it

[5] By analogy, a surgeon operating on an appendix does not consider himself, and is not thought of as, a scientist engaged in scientific work. The same applies to an engineer designing a building, and so on and so forth. But no one would doubt that all these activities heavily rely on science, and these professional smust have scientific training and qualifications. Likewise, it is also obvious that not only the study of the theoretical foundations of these activities is scientific but also the theoretical generalization of experiences gathered from practice. Or to take a library example, classification as a library operation is an activity requiring scientific training but not science. The study of the theory of classification, in turn, may well be considered as science. The only question here is whether the theoretician of library classification is a scholar of „library science" or whether his activites — a form of scientific classification — belong to the sphere of philosophy. However, what really counts is not the label but the content.

was of a merely technical character. To be sure, the forerunner of contemporary abstracting journals, Chemisches Zentralblatt, started as early as 1830, and documentation archives were set up within the technological and development offices of industrial plants. It is also true that archives of economic documentation started their work in those early years within or outside libraries.[6]

This new-type information demand was characterized, first of all, by speed, by the many-sided presentation and analysis of the content of periodical literature in compliance with the customer's needs, and also by the processing of documents other than traditional publications (business reports, prospectuses, price-lists, and so forth). All this naturally involved the development of working methods and forms not peculiar to scientific libraries. Thus, for instance, one most essential function of scientific libraries, the preservation of the holdings, is partly or fully absent from documentation. The literature, presented and analyzed by documentation, is not necessarily available at documentation centres *whose main task is not to preserve the source material but to supply information of it*. This, in fact, is its chief peculiarity. However, it should be added that no theoretical consideration is against uniting or combining these two basic types of information services within one and the same institution as proven — and also disproven — by many examples. The legal status and name of the servicing institution, the place of these services in the hierarchy within the institution are all practical,administrative questions not affecting the merit of the problem. Viewed from a scientific angle, the relationship between the two types of services can be nothing but *coordination*. It is, then, just as improper to look upon documentation as part of library operations as to qualify it as fully independent of the library. The former conception has long been made obsolete by practice: documentation has its own ways and methods, "means and modes of expression" deriving exclusively from its peculiarities, — presentation, analysis, and transfer of information —, which justify its independent operation wherever possible and when necessitated by the circumstances. The latter conception has never been proven, either theoretically or in practice, and as to the *theoretical definition of documentation, it is not less uncertain and vague than that of library science*. It should also be kept in mind that the library conception has also undergone changes (particularly as a result of the activities of special libraries), the information conception of libraries has made certain approaches to that of documentation. Theoretically, the solution might be found in what library work, bibliography (which is at least as "independent" of library work as documentation) documentation have *in common*, and in what *links up these three large spheres of information* rather than in what separates them.[7]

[6] *Chemisches Zentralblatt* may be looked upon as one of the classical examples for the independence of documentation because right from its inception, it has been an abstracting journal independent of any library. However, this proves nothing, but nor does its opposite: had it been published within the framework of a library, this would not prove either that the natural workshop of the editing of an abstracting journal is the library.

[7] The author has already defined his position in this matter in his work "A társadalomtudományi kutatás és a tudományszervezés tájékoztatási problémái" Budapest, 1965. Akad. K. pp. 174. (Information problems of social science research and the "science of science".)

Reference should be made here to *attempts at and researches in mechanized data processing and retrieval* as a recent factor strengthening the documentation-oriented approach. If the momentarily utopistic conception formulated by a Hungarian author — that "unwritten records of mankind will be stored in a few large international centres, being not huge libraries, taken in the present sense of the world, but giant data storing-machines, memories, the central register of human knowledge and culture",[8] became true, it would certainly involve revolutionary changes in the storage and diffusion of information, a change challenging the most up-to-date library work and even the value of the printed word as well as the traditional forms of publication. It would certainly involve a profound transformation of the world's cultural character.[9] Much experience will have to be gathered to enable us to tell whether this will ever be accomplished or is desirable at all. But one thing may be taken for sure even now: the solution of mechanized data processing is not a problem of documentation only but also that of scientific information in general, including scientific libraries. Here, too, the task is to find a solution to what is common, leaving the distinctive marks out of consideration.

History-oriented approach

This approach, which perhaps should have been dealt with first for the sake of historical fidelity, appears in the clearest form, both objectively and subjectively. Obviously enough, studying historical themes (the history of the book, history of libraries and printing) has been and will always be relevant to the scholarly profile of large historical libraries, inseparable from their holdings, traditions, and from the generations of librarians with classical erudition. This scholarly character has always existed and will exist as long as the traditional forms of publications survive, and even after that since the above-mentioned huge machines will never be able to substitute for historical studies, codexes, books, old and rare manuscripts, and their scholarly treatment.

What the history-oriented approach represents is the *conceptual continuity* of historically developed large scientific libraries. It remains progressive as long as it assumes no aristocratic "traits" and does not consider the historical studies only as scholarly or scientific work. But as soon as such distortions appear, other types of library (and documentation) work will be underrated and qualified — admittedly or not — as practicism, ephemeral or as "non-scientific", etc., an attitude which will be regarded the students of the affected fields as "conservativism", "estrangement from life", etc., and will be reciprocated with an underestimation of historical subjects. This also leads to the stiffening of views on both sides as is the case in the library-documentation dispute, although historical themes, important as they are, do not represent the whole domain of library science.

[8] Ákos, Károly: A tudomány fejlődése és a könyvtárügy. *Az Egyetemi Könyvtár Évkönyvei*. 2. Budapest, 1964. p. 103—107. (The advancement of science and librarianship.)

[9] In all probability, it was the anxiety about the over-growth of "machine-culture" that propted László Németh, the outstanding writer, to refer in his work "Égető Eszter" to the machine as a devastating marauder.

In outlining the different approaches we started from the assumption that the relative backwardness of theoretical studies is one major reason for the virtual incompatibility of these approaches and of trends in library policy reflecting them. Virtual indeed, since theoretical investigation in library science (used as a collective term to denote the related investigations) and in science organization (showing presently and hopefully in the future, too, an upward tendency) do not furnish a sound basis for the assumption that the differences between studies termed as library science (more accurately: the theory of library work), theoretical studies in documentation and historical investigations, i.e., between these disciplines are more significant than their coordinatedness or their common features. These common features are definitely predominant, and the controversy over terminology, classification and organization reflects the backwardness of theoretical studies which is even deepened by the fact that the classification and theory of science have not had much to contribute to the solution of this complex of problems. The fields discussed here (library, documentation, historical research) may be considered as a dialectic unit, *all the three fields with their peculiarities form an organic part of a uniform cultural and science policy*, and this, in turn, organically includes — to use a general collective term — a uniform library system and librarianship whose conception and interpretations also raise their particular problems.

V. THE CONCEPTION OF THE UNITY OF THE LIBRARY SYSTEM AND LIBRARY SCIENCE NEEDS TO BE FURTHER DEVELOPED. THE SCIENTIFIC LIBRARY HAS TWO FEATURES: IT APPEARS AS PART OF THE UNIFORM LIBRARY SYSTEM, AND AS PART OF THE ENTIRE BODY OF SCIENCE, AND AS SUCH IS A SUBJECT OF SCIENCE POLICY

Varying from one country and period to another, the type of the supervising body (or bodies) of libraries is what indicates the "administrative" conception formed — or not formed — about the scientific library. Consequently, the theoretical elaboration and classification of the above-discussed problems may only permit the theoretically well-founded elaboration and further development of the conception of a uniform library system and librarianship.

The scientific library — including the special library and documentation, too — is an organic part of culture and of the uniform library system involving the various types of public libraries, and is also part of the entire body of science, an integral part, a component of the scientific and technical revolution, thus having a double feature. This being so, the concept of the unity of library system and librarianship, taken by itself, is nothing but a fiction much in the same way as unity of education, were it to appear without any differentiation of the various types of schools. Differences between the individual levels of school-types and of libraries indicate certain qualitative differences in requirements and purposes rather than in value or order of rank. In the case of library-types this involves a differentiation in their holdings, in the organization of their holdings, in their methods and services. In this sense, the scientific library is a subject of science policy and organization, and as regards planning, it should be dealt with within the given country's scientific and technological

plan, without, however, being omitted from the cultural plan, since it also forms a separate heading within the plan of the socio-cultural branch. Accordingly, the trend in the further development of the concept of the unity of library system and librarianship would be this: *to shift the stress towards the unity of science in the light of the library's double feature and commitment.* This would be likely to have certain implications in practically every field: problems would arise in such fields as scientific qualification, scientific research, higher education and training, technical instrumentation, etc.

All this requires further investigations and also *necessitates, in perspective, a many-sided, concrete inquiry into the problem of scientific libraries, and the state of library theory, as part of the national science policy.*[10] These problems are "touchy" only in cases where they are latent and are approached with impatience and mistrust without due understanding, or if questions of prestige, real or imaginary, with different values come to the fore instead of a scientific conception. Anyway, many more important questions, theoretical and practical, remain to be solved in the sphere of the unity of librarianship than the relationship between general scientific and special libraries.

VI. THE THEORETICAL FORMULATION AND FOUNDATION OF THE DIVISION OF LABOUR BETWEEN SCIENTIFIC LIBRARIES (AS GENERAL) AND SPECIAL LIBRARIES (AS PARTICULAR) IS ONE OF THE KEY-ISSUES OF A FURTHER DEVELOPMENT OF SCIENTIFIC LIBRARIANSHIP AS A WHOLE

In the age of what is called "information deluge", the large scientific library of universal character is nothing but a fiction as regards the comprehensiveness of written documents. Carrying this problem to absurdity, such a universal library would assume all the functions now performed by the national libraries of the world, a task that cannot be tackled even by such immense institutions of "unlimited" possibilities as the Lenin Library or the Library of Congress. And, considered from an international viewpoint, nor is there a need for such a giant institution. It may well be laid down as a principle that "*one library is no library*" since only the totality of libraries and library networks of a country (or with some exaggeration all libraries of the world) can potentially meet all the demands of science. The document production of a country is made available to both national and international users by the country's national library, and the pooling of these documents in their entirety or even partly into one universal library is all the more unnecessary since both the content and the level of the documents are extremely heterogeneous. Universality in such a sense that a library should collect everything (even only to a defined degree) from 0 to 9 in terms of UDC is also unnecessary.

However, there is a positive need for the existence of "universal" or rather general libraries whose "universality" is taken in another sense, even

[10] This would require a series of analytical studies which could tackle the problems connected with the possibilities of publication. "The publicity" of the theme should involve an open discussion on the major theoretical problems of scientific librarians, along with some more important information problems of the individual branches of science in organs other than the professional library journals. (There have been some initiatives taken in this respect.)

within the narrower compasses of defined fields of collecting (profile), and these libraries perform indispensable functions.

These functions are the following. A special library usually covers, to the largest possible extent, literature necessary to current research projects irrespective of the trend, new fields of research or new branches of science and scholarship appearing in the world's scientific literature. In deliberate scientific cooperation (and division of labour) with the special libraries, the task of the general scientific library may consist in acquiring whatever it considers of lasting value in world literature, going into detailed acquisitions only within the scope of its main profile. *The meaning and justification of universality* derive from such an outlook upon the world, and from an independence of fixed fields, thus permitting one to follow the development of new disciplines (are not a fictitious general collection covering all the existing fields and so necessarily superficial), on the one hand, and, on the other, from the fact that up-to-date scientific work is characterized by complex research assuming the cooperation of several major disciplines, as well as their literature.

A scientific library may be considered to have a general profile even if it collects a selected array of outstanding works within some but not all disciplines. A further criterion for universality is the acquisition of encyclopedic, bibliographic, general scientific works, handbooks, union catalogues, directories, and the like which cover all branches of science and whose centralization promotes the information of the special libraries, too. In other words, taking part in the division of general library work are general scientific libraries through their centralized information basis and special libraries through their decentralized and highly specialized holdings. This is one of the most important forms of centralization and decentralization combined in scientific libraries. This can be outlined in the following way:

	General scientific library	*Special library (and documentation centre)*
Holdings	Specialized only in some disciplines; Outstanding works of world literature; Independent of current research; Literature in complex research; Literature of new disciplines; Special collections	Detailed as required by the research (educational subject within one or a few disciplines and/or sectors)
Information basis	General: standard, reference works, manuals, handbooks	At sectoral level depending on the profile of the institute
Services	Nation-wide and covering international relations	Participation in institutional and sectoral cooperation, limited international relations

It should be noted here that the conception of the unity of librarianship is closely connected with this problem since public library systems also have an important task to be performed and further developed in the transmission of the services of scientific libraries.

The question of what disciplines a general scientific library is expected to cover or neglect in its following up world literature and in its acquisition policy is a practical one to be answered for each individual case as a function

of time and place. The related questions which are still to be solved include, among others, the elaboration of the feasible forms of the division of labour, ensuring instrumentation, intellectual and technical, necessary to it, the development of the administrative network and sectoral cooperation, and — indirectly — the relationship between scientific libraries and the problem of the "two cultures", although thematically this leads on to the next chapter.

VII. SCIENTIFIC LIBRARIES HAVE PARTICULAR TASKS IN RECONCILING THE CONTRADICTIONS, DIVERGENT VIEWS, AND PROBLEMS ARISING FROM THE DEBATE OF THE „TWO CULTURES" (NATURAL SCIENTIFIC VS. HUMANISTIC ERUDITION AND CULTURE)

The concept of the "two cultures" denotes the (natural) scientific and humanistic erudition and world concept as has been used in recent debates.[11] The reader's knowledge of this debate and of its major issues is taken for granted, so it is, therefore, needless to outline it here. The debate, however, poses the question of whether the scientific library can play any role, and if so, what role — in the formation of the "two cultures", the two world concepts and in reconciling the related contradictions?

It hardly needs any proof that special libraries and documentation play a considerable part in scientific and technical education, in research and in the dissemination of scientific knowledge. Similarly, the active role of the respective sectoral libraries in the diffusion of the social sciences and humanities is also obvious. Nor is it doubtful that the scientific and technical libraries are also supposed to participate — within reasonable compasses — in propagating the knowledge incorporated in the social sciences and vice versa, while public libraries should be engaged in diffusing both scientific fields. What is, at most, needed here is the development of more feasible methods and forms. What is, then, the role — or more accurately the particular role — of the historically developed large general scientific libraries with sizeable historical and special collections?

I have already referred to the two extremities of views as to the prospects of written records and the "mechanized culture" (huge machine memories and the "marauder-machines") — neither of them being able to solve the problem. Mathematical methods and the resulting mechanical or cybernetical methods, applications, processes have gained ground in the fields of social sciences and humanities, e.g. in economics, demography, mathematical linguistics, machine translation or in our narrower field: mechanized storage and retrieval of information. This is an irresistible process promoting and enriching science which

[11] Literature on this subject is on the increase. Lectures of Charles P. Snow and Bertrand Russell provoked debates all over the world. Commissioned by the European Coordination Center for Research and Documentation in Social Sciences (Vienna), Professor Sándor Szalai is the director of a major research project concerned with the problems of free time ("time-budget project"). This project is an outstanding example of East-West cooperation. Here I refer to S. Strumilin's book: Nash mir cherez 20 let. (Moscow, 1962. Sovetskaya Rossiya. pp. 190.). All this and other works not mentioned here, dealing with free time, the division of labour and the possibilities of the personality's development, together with the debates on "alienation", are connected, directly or indirectly, with the „two cultures".

should be furthered with all possible means but *should not be fetishized or absolutized*. Mechanization and the machine itself is a tool, a means capable of increasing the capacity and effectiveness of intellectual work, without being able to substitute for it (e.g. in art and literature). Its mission is to serve as a tool, to promote the development of science, the increase and rationalization of production.

Marx explained that "work no longer appears embedded in the productive process, but it forms something in the course of which *man acts as the supervisor and regulator of the productive process.* (As it is true for machine production, so it applies to the combination of various types of human activities and to the *development of human relations, too.)*"[12] Furthermore, "it is not the direct work done by man himself, nor is it the time during which he works, but the *mastery of his own universal productive force*, the fact that he understands and takes possession of nature ... in short, it is *the development of the social individual that appears as the pillar of production and economy.*" Hence the conclusion: "*the real richness is nothing but the developed productive force of all individuals. The measure of richness will then be not the working time but the free time.*" In addition to this, Marx's following statement also serves as an approach to the debate on the "two cultures", and also to our immediate problem of the particular role of scientific libraries: "Economy of working time is identical with increasing the free time, that is, *with the increase of time necessary to the full development of the individual, which as an immense productive force by itself reacts upon the productive force of work.* From the aspect of the direct process of production, this economy of working time may be looked upon as the production of fixed capital; this fixed capital is man himself ..." "Free time, which is partly leisure time, partly *time to realize more sublime activities, naturally changes him who possesses it into a different subject*, and this person enters as a different subject in the direct process of production."

What is, then, the particular role of the scientific library in realizing this Marxian humanistic perspective? On the one hand, it is expected to promote the process of science and production with all possible means (the possible modes of which is dealt with by a maze of library publications and a wide range of library and documentation services) in order to achieve the maximum free time. This end is served primarily, by the propagation of scientific, technical and economic knowledge, an activity particularly emphasized throughout the world. On the other hand, the scientific library has and will have continuously to propagate the results of the social sciences and humanities, as well as the related documents and literature necessary to the full development of the individual which enrich its emotional world and develop the humane "fixed capital". *In this sense, these two kinds of the propagation of knowledge form an organic unit*, neither of them having a priority over the other, and their contradiction is only virtual: ultimately both of them are human-centered since real richness is nothing but "the developed productive force of all individuals".

However, to achieve this end it is necessary that libraries in the field of the social and humanistic studies should be brought into line with the

[12] MARX's drafts on the problems of political economy, first published in *Bolshevik* (No. 11—12, 1939.); the Hungarian translation is based on this text. Other citations are taken from the same sources. (Italics mine: G. R.) — Since no authentic English translation is available, this text is the rough translation of the Hungarian version.

scientific and technical libraries as regards their development, or broadly speaking, libraries should be developed so that they might be able to meet the prospective requirements at a time when free time will be incomparably more than now, when *popular masses will pursue such "sublime activities"* as science, literature, arts, and when not only the specialists but also the masses relieved from the burden of narrow specialization will also study their "prehistory" out of being interested in it, and finally, when scientific work will become a massive activity. Preparations for all this should be started just now — and carried on continuously — with the organization of the holdings and with the acquisition on a large scale, and arrangement of documents (old and rare books, manuscripts, and general scholarly works covering the individual fields of the humanistic studies) whose "moral amortization" is negligible, if any. These are thevery documents the handling of which will certainly constitute a considerable part of "sublime activities" and will contribute to the many-sided development of the personality as against works of rapid "moral amortization' which are indispensable today, but will become obsolete in a few years because of the rapid development of science and technology (this applies primarily to technical works, but, to a limited extent, to scientific works, as well). Envisaging a renaissance of the humanistic studies and *considering the "two cultures" and the two world outlooks as a unity*, scientific libraries have deliberately to make preparations for all this, and have to work on the formation of this unity. It is only with this that scientific libraries might successfully play their particular role in scientific and technological development and might adequately add — not only in the scientific and technical field but also in the humanistic education, in the formation of human character and society — to the many-sided development of the individual with their particular methods.

VIII. SCIENTIFIC LIBRARIES ALSO HAVE PARTICULAR TASKS IN ELIMINATING BACKWARDNESS, IN REACHING THE WORLD STANDARD IN THE ECONOMIC, SCIENTIFIC, AND TECHNOLOGICAL FIELDS AND IN INCREASING THE „PER CAPITA KIND FEELING" IN THE HUMAN FIELD

As has been referred to above, the tasks of scientific libraries in promoting research work and technological development, along with the related methods and forms are dealt with by an extremely sizeable special literature. Much attention has also been given in the literature to the general tasks, situation and to the questions of developing the scientific library[13]. It is obvious that scientific libraries also have tasks — even though indirectly or through transmissions — in the peaceful competition of the two great political systems of the world and they have to contribute to solving the immense problems of the developing countries. In the economic, scientific and technical fields, this may be formulated in the following way: scientific libraries can also be of help in catching up with the world standard. This is precisely what

[13] Illustrative of how libraries try to find new ways and means is P. GYÖRE's article: Mooers törvénye. (Megjegyzések az információ használatának lélektanához és szociológiájához.) *Tudományos és Műszaki Tájékoztatás*, 1964. p. 748–763. (Mooers' law.) (Remarks on the psychology and sociology of the use of information.)

sets a perspective before the library. And this is the ultimate objective of library and documentation work in these fields.

However, catching up with the world standard also has its own perspective or ultimate objective which is not merely the raising of the per capita production of steel or butter, etc. to a certain level in order to attain an abundance of products in the last resort and which of the "two cultures" in accordance with what have been discussed above in order to develop the individual to the full, in other words, the competition is going on not only for the increase in the "per capita" production of steel, butter, etc. but also for what might be termed as "*per capita kind feeling*" or "*per capita consciousness*" or even "*per capita human dignity*".

And this is not easier or simpler than the "material" competition by a long way.

The interdependence between economy and consciousness is just as obvious as the complexity of this interdependence and the ambiguity of interactions.

Thus, among other things, no one may assume that wealth by itself can automatically cause an increase in the "kind feeling" or can raise human dignity to a higher level or can make us happier. He who takes his lunch two times or has twice as many clothes or has twice as big an apartment, does not necessarily have twice as great an awareness of the quality of life. If wealth, personal or social, were automatically to increase "the kind feeling", or to imply more culture or to involve more "sublime activities", this would certainly appear so in the historically "luckier" and richer nations of the West. "Alienation" and various signs of crisis in the "kind feeling" do not refer to this. The reverse of what has been stated above is not true, either, at least in society, namely that in the long run "one may dream of beauties even kneeling on peas".[14] Without a high level material culture and production and without an abundancy of products there is no free time and its use in the Marxian sense; there is no possibility of eliminating narrow specialization and of developing citizens with many-sided personalities. This might be possible for the individual or for groups with a high degree of consciousness but not for society as a whole.

It is however, highly probable — or rather necessary — that the countries which have started their development with underveloped productive forces and under less favourable circumstances, will yield more as regards the "per capita kind feeling", human dignity or educational opportunities than the economically more developed bourgeois countries. This is true in many respects and much has come true by now, particularly in the field of education and culture.

What we have in mind, then, is that the term "peaceful competition" is taken to mean not only an economic competition but — considering its final objective and its possible approach — also a competition for the increase in "kind feeling", both socially and individually. *Following from the contemplation*

[14] Reference to a passage in Imre MADÁCH's classical work "The Tragedy of Man". Scene 12.

". . . To keep you wide awake, you'll kneel on peas.
PLATO:
I'll dream of beauties even on my knees . . ."

of this peaceful competition as a unity of economy and consciousness are those particular tasks of the scientific library which have already been explained in the previous paragraph. Thus, what have been stated in connection with the interdependence of the peaceful cooperation and the scientific library start out from and return to the debate of the "two cultures".

The complex participation of the scientific library in the peaceful competition and in the elimination of backwardness is what ultimately widens the horizons, perspectives and social usefulness of work, and defines the place of scientific libraries in the social division of labour in the age of the scientific and technical revolution.

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